A Eurozone Slowdown Is For Sure; Recession Is Less Certain

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There's no doubt: Europe is experiencing a sharp economic slowdown. High commodity prices, enduring supply-side bottlenecks, and a disorderly market reaction to faster rate hikes announced by central banks have weakened the recovery from the worst of the pandemic. **Will these multiple shocks now force Europe into recession?**

Defining A Recession (Properly)

First, an answer requires a clear understanding of what a recession entails. One swallow does not make a spring, and two consecutive quarters of decline in GDP do not automatically qualify as a recession--although that is a commonly used metric. Economists use a broader definition, such as the one by the U.S. National Bureau of Economic Research. According to NBER, a recession involves--from peak to trough--a significant decline in activity spread across the economy that lasts more than a few months. It requires not only a decline in headline GDP, but also a drop in its main components, sectoral incomes, and employment.

Adapting this definition to the European economy, the Euro Area Business Cycle Network has dated six recessions since the 1970s (see chart). Interestingly, this dating excludes the 2001-2002 burst of the internet stock bubble. That's because the weakness in activity did not spread across the economy. Indeed, EABCN defines a recession in the eurozone as occurring across not a few but most countries.

Second, an answer also needs a clear signal that a recession is coming. Economists Arturo Estrella and Frederic S. Mishkin clearly argue that the slope of the yield curve is the most reliable early financial indicator. An inverted yield curve--when the level of short-term interest rates exceeds that of long-term interest rates--normally signals a recession in the making over the next 12 months. But what part of the yield curve, and what bond market to examine? The 2-year/10-year slope or 3-month/10-year slope? The spot market or the forward market? Forward prices may differ from spot prices, especially for short-term maturities, at time when markets are betting on future central bank actions.

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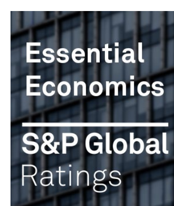

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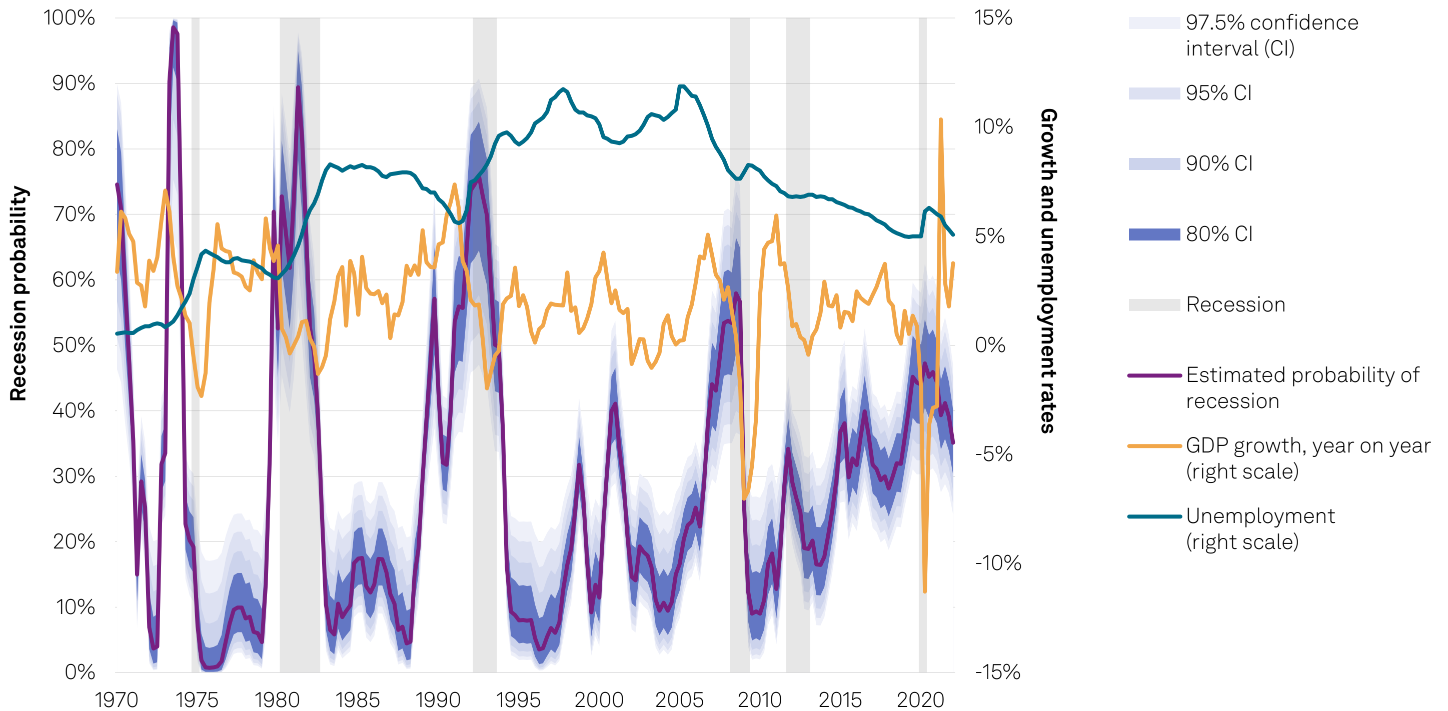

Sources: S&P Global Ratings, CEPR Euro Area Business Cycle Dating Committee, OECD.

Modeling Recession Probabilities

We consider three probit models to assess the risk of recession in the coming 12 months (see the next section for details about probit models). We based them on:

- 1. Movements in the spot 3-month/10-year yield curve, by taking the German benchmark curve, at the time of the six previous recessions identified by EABCN;
- 2. The forward 3-month/10-year yield curve for those previous three recessions, given that a forward curve is not available for the older vintages of recessions; and
- 3. The spot yield curve at the time of the last three recessions.

Not surprisingly, since markets expect the ECB to gradually raise rates until the end of next year, No. 2, the forward curve model, yields a higher probability of recession (45%) than No. 1, the comprehensive spot yields model (22%). And No. 3 gives a probability of 36%. **But rather than focusing on one or the other model, we look at the combined range of their estimations:** They lead to an average probability of 35% of a recession in 12 months in the eurozone, with a 90% confidence band ranging from 30% to 43%.

These probabilities reflect current market pricing, which is driven by fears of a cutoff in Russian gas and a possible policy rate overshoot by central banks. These risks might materialize, in full, in part, or they might not. So, beyond these exercises, **it remains essential to assess the situation by looking at the economic fundamentals.** We see that the European economy is dealing with severe external shocks, while still struggling to fully recover from the pandemic. Production must catch up on a large number of backlogs, while inventories are depleted. Public investment is on the rise. Interest rates are deeply negative in real terms. Households' balance sheets are strong, and the labor market shows no sign of cooling. **Given the magnitude of the shocks, a sharp downturn in growth is 100% sure, but the chance of a full-fledged recession is only 30% to 43%.**

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Probit Models On The Risk Of Recession

To assess how well the yield curve predicts recession, we use so-called univariate probit models that directly relate the probability of being in a recession at a point in the next four quarters in the coming year to the yield curve spread. We consider both the 3-month/10-year spread on the spot yield curve and on the forward yield curve.

A probit model is a regression where the dependent variable Y can only take two values, 0 and 1. It estimates the probability that an observation X with some characteristics β will fall in the 1 category. We conduct this exercise through the maximum likelihood estimation method.

Technically, we define the latent variable $Z = X'\beta + \varepsilon$ with ε a normal error term. Then, $P(Y=1|X) = P(Z>0)$ is given by the cumulative distribution function of the standard normal distribution at $X'\beta$. The maximum likelihood estimation is a method that looks at the best coefficients β that maximize the likelihood function, an indication of the chance of getting the precise sample (X,Y) that are dependent on the values of β. With this optimal β^*, we can estimate the theoretical probability of falling into the 1 category for any observation of X.

This method and its application are inspired by Estrella & Mishkin (1996).

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